

Article

Science-Engaged Thomism

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Abstract: This article discusses a form of Thomism that has emerged in the field of science and theology, which is termed “Science-Engaged Thomism” (SETh), following the recent and growing movement of Science-Engaged Theology (SET). After a brief introduction of SET, various definitions and essential features of SET and SETh are introduced and discussed, highlighting their similarities and differences. To showcase the latter, the article presents recent examples of SETh. The objective is to suggest that SETh is a form of Thomism, although not necessarily a new form of Thomism. As such, SETh might be considered a complementary approach to SET.

Keywords: Science-Engaged Theology; Science-Engaged Thomism; science and religion; Thomas Aquinas; Thomism; River Forst Thomism; *loci theologici*

1. Introduction

There are, by now, many forms of Thomism.¹ In this article, I would like to present and discuss a form of Thomism that has emerged in the field of science and theology, which could perhaps be called “Science-Engaged Thomism” (SETh), following the recent movement of Science-Engaged Theology (SET) in the same discipline.² In a first approximation, we could define this version of Thomism as follows:

(SETh₁) Thomism is science-engaged if and only if science is, and is used as, a source of knowledge.

The term “Thomism” should be taken here to include both Thomistic theology and philosophy. “Science” could mean both the “science” of the time and modern science. If the former, it might be that it does not qualify as “science” in the modern sense but would today be considered a form of natural philosophy or natural history. Moreover, according to the proposed understanding, SETh would apply to both the thought of Thomas Aquinas and of his followers, later Thomists. Finally, “source of knowledge” refers, as I will explain below in more detail, roughly to what is, following Melchor Cano, traditionally called a “theological place”; theological places are sources of theological knowledge, that is, places or sources from which theological arguments can be derived. As such, this source of knowledge would be specific to theology in general, not just Thomistic theology. Analogically, we could say for philosophy that philosophical places are sources of philosophical knowledge, that is, places or sources from which philosophical arguments can be derived. To make this clearer, we could stipulate the following modified definition:

(SETh₂) Thomistic theology or philosophy is science-engaged if and only if science is, and is used as, a source of theological or philosophical knowledge.

By way of introduction, it might be helpful to draw two parallels. On one hand, we may introduce SETh by placing it parallel to Analytical Thomism, which seeks to synthesise Thomism and analytic philosophy.³ Mirroring John Haldane’s well-known description of Analytical Thomism,⁴ we could state that SETh involves the bringing into mutual relationship the styles and preoccupations of the discipline of science and theology in general and SET in particular on the one hand and the ideas and concerns shared by Thomas Aquinas and his followers on the other. As Haldane (2004, p. 11) observes: “For



Citation: Kopf, Simon Maria. 2024. Science-Engaged Thomism. *Religions* 15: 591. <https://doi.org/10.3390/rel15050591>

Academic Editor: Jeffery D. Long

Received: 30 March 2024

Revised: 4 May 2024

Accepted: 6 May 2024

Published: 11 May 2024



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Thomists the point of trying to understand Aquinas must be to see more clearly how best to formulate and answer perennial philosophical and theological questions”, and some of these questions are posed, or posed anew and differently, by science. In essence, then, SETh attempts, in one form or another, a synthesis of Aquinas and the sciences, similarly as Analytical Thomism seeks a synthesis of analytic philosophy and Thomism. The synthesis in question, however, is not to be conceived of as a combination of Thomism and the sciences into a unified whole, but rather as an incorporation, integration, or appropriation of relevant scientific findings into Thomism.

On the other hand, we could draw a further parallel between SETh and the recent movement of SET, which seeks to appropriate the sciences as a source of knowledge for theology. Doing so would highlight the *Sitz im Leben* of the label—although arguably not of the approach of—“Science-Engaged Thomism”, mirroring and responding to the recent call for Science-Engaged Theology in the field of science and theology. It would also show important similarities and differences between SET and SETh, which both contribute in distinct ways to the ongoing science and theology conversation.

To this end, the article proceeds as follows. In Section 2, I shall outline the concept of SET, before turning, in Section 3, to the question of whether SETh can rightly claim to be a form of Thomism. In Section 4, I shall present recent examples of SETh, and in Section 5, I will highlight differences between SETh and SET and address some objections to this approach.

2. What Is Science-Engaged Theology?

There is a new and growing movement in the science and theology discourse, commonly referred to as “Science-Engaged Theology” (SET).⁵ John Perry and Joanna Leidenhag introduced the concept “to remind theologians that science ought to count among the sources of Christian theology” (Perry and Leidenhag 2023, p. 2).⁶ The sources of theology, or theological sources, they have in mind are primarily the so-called Wesleyan Quadrilateral (Perry and Leidenhag 2023, p. 50). According to this Methodist teaching, there are four sources of theology: (1) Scripture, (2) tradition, (3) experience, and (4) reason. Accordingly, theological statements need to be “revealed in Scripture, illumined by tradition, vivified in personal and corporate experience, and confirmed by reason” (The Book of Discipline 2016, p. 103).

In claiming the sciences to be a further theological source, however, Perry and Leidenhag (2023, pp. 50–54) refuse both to identify science with one of these sources and to posit science as an additional source: “our preferred answer to the question of where science fits among the sources is to say that sometimes it is helpful to view the sciences as an extension of one particular source, sometimes as implicated in all four Wesleyan sources, and sometimes as something a bit different from any” (Perry and Leidenhag 2023, p. 51).

What, then, makes theology “science-engaged”? Here is a suggestion:

(SET₁) Theology is science-engaged if and only if science is, and is used as, a source of theological knowledge.

One way of supporting this view is by reference to Melchor Cano’s influential work *De Locis Theologicis* (1563), in which he introduces ten theological places (*loci theologici*), or sources of theological knowledge: the authority of (1) Holy Scripture (*auctoritas Sacrae Scripturae*), (2) the Tradition of Christ and the Apostles (*auctoritas traditionum Christi et apostolorum*), (3) the Catholic Church (*auctoritas Ecclesiae Catholicae*), or the Universal Church, (4) the Councils (*auctoritas Conciliorum*), (5) the Roman Church (*auctoritas Ecclesiae Romanae*), (6) the Old Saints (*auctoritas sanctorum veterum*), or the Church Fathers, (7) Scholastic theologians (*auctoritas theologorum scholasticorum*) (and canonists), as well as (now as the only instance without the prefix “the authority of”) (8) natural reason (*ratio naturalis*), “which through all sciences found by natural light extends most widely”,⁷ the authority of (9) the philosophers (*auctoritas philosophorum*), and (10) human history (*humanae auctoritas historiae*). Following Aristotle’s *Topics*, where Aristotle speaks of common places (*topoi*),⁸ or roughly speaking, commonly held opinions or shared assumptions as starting points for a

dispute from which arguments about the disputed matter can be derived, Cano introduces places specific to Christian theology—homes of all theological arguments (*domicilia omnium argumentorum theologorum*) or seats, or places, of arguments (*argumentorum sedes*), by which he means sources from which theological arguments can be derived. The first seven theological places are so-called “proper places” (*loci proprii*), which are places unique to theology, while the latter three are called “foreign places” (*loci alieni*), which are places shared with other disciplines (*De Loc. Theol.* I.3).

Peter Hünemann (2003a, pp. 207–51; 2003b) has updated the list of theological places on the basis of the Second Vatican Council (1962–1965), which now includes, as proper places, the authority of (1) Scripture and the Apostolic Tradition, (2) the Communion of the Faithful (*congregatio fidelium*), (3) the Liturgy (as a pragmatic place), (4) the Magisterium of the Bishops, especially the Councils, (5) the Magisterium of the Roman Bishop, or the Pope, (6) the Church Fathers and the *sapientia christiana*, (7) the theologians and theologies, (8) the tradition of faith in other Christian Churches and communities, and as foreign places, (9) philosophy, or rather philosophies in the plural, (10) the sciences, including, but not limited to, the natural sciences, (11) culture(s), (12) society, (13) religions, including Judaism as a semi-proper place, and (14) history.

The important point for the present purpose is that the sciences are now—post Scientific Revolution—included among the foreign places, as distinct from philosophy, among those sources from which theological arguments can be derived that are shared with other disciplines. Following both Cano and Hünemann, we could further specify what makes theology “science-engaged”:

(SET₂) Theology is science-engaged if science is, and is used as, a *locus theologicus* (*alienus*), that is, a source of theological knowledge (shared with others).⁹

A similar point is expressed by Leidenhag (2023, p. 2), when she states that SET uses “the tools and methods from other disciplines in order to make incremental progress on specific theological questions”. In other words, theology makes use of a source of knowledge that it shares with other disciplines, in order to make progress on a genuine theological problem. In fact, insofar as SET is a genuinely *theological* discipline, it is important that the starting points are theological questions: “science-engaged theology starts with theological questions on which empirical studies may shed some light” (Perry and Leidenhag 2023, p. 63).

Three further characteristic features of SET are important for the present purpose. First, SET deals with entangled questions, that is, questions concerning entangled concepts. In the context of SET, entangled concepts are defined as follows: “Entangled concepts are concepts that cannot be understood as either scientific or theological in meaning and origin, but only as both” (Perry and Leidenhag 2023, p. 15). In theology, then, entangled concepts are those that entail empirical claims. Theologians should therefore ask themselves, “what methods or tools could help me improve this claim we are making about the empirical world?” (Perry and Leidenhag 2023, p. 48).

Perry and Leidenhag (2023, p. 57) subsequently distinguish two kinds of entanglement: (1) conjunctive entanglement, where the entanglement results from the conjunction of two or more non-entangled concepts from different disciplines; and (2) concept entanglement, where the entanglement stems from a single concept that entails a claim or claims about another discipline or other disciplines. In the former case, the *claim* is entangled; in the latter case, the *concept* is entangled.¹⁰

The point is that proponents of SET claim SET to be appropriate precisely in these entanglement cases. The argument is that if and to the extent that theology deals with entangled questions, then an engagement with the sciences is appropriate: “whenever theologians make claims about [...] empirical realities, they should incorporate the insights of empirical investigation into their analysis” (Perry and Leidenhag 2023, p. 1). Conversely, then, as a theological discipline, SET explicitly allows for, and for the most part is based on, theological sources other than the sciences (Leidenhag 2023, p. 3). For this reason, as

Perry and Leidenhag (2023, p. 8) point out, “[t]heologians do not need to set aside their particular faith and denominational concerns and commitments”.

The second and third features I will mention here only briefly; I will come back to discuss them in more detail in the final section. Second, SET is meant to stay local and specific: “When theologians engage the sciences, they cannot engage them all at once, nor even a whole sub-discipline (biology), perhaps nor even a sub-area of subdiscipline (mood disorders)” (Perry and Leidenhag 2023, p. 48). Third, questions of methodology are set aside. As Andrew Davison (2022b, p. 2) has observed, “a desire to demote matters of methodology to second place is perhaps the definitive hallmark of this approach. [...] [M]ethodology is important, but one can spend only so long clearing one’s throat; eventually the time comes to say something”.

Before moving on to SETh, I would like to address an objection regarding my rendering of SET. Mark Harris (2023, pp. 16–22) has pointed out a development, or at least a certain shift in emphasis, in how Perry and his coworkers have conceived of SET: from (1) a *Swiss Army knife*, which contains multiple well-defined tools for different problems, suggesting that SET comes into play whenever theological problems need multiple tools, including specific scientific tools (Perry and Lane Ritchie 2018, pp. 1087–88), to (2) *theological puzzles*, by which they mean “narrowly-focused theological questions that are already entangled with scientific theories and findings” (Perry and Leidenhag 2021, p. 247),¹¹ suggesting that SET identifies such entangled questions which, again, require multiple tools to solve the theological puzzles, including specific scientific tools, to (3) a *reminder* “to theologians that the local tools and products of the sciences ought to be sources for theological reasoning” (Perry and Leidenhag 2023, p. 1).

Harris (2023, p. 22) therefore concludes that there is an evolution of the SET movement in which “the first [stage] suggests that SET uses the sciences as *tools*, the second sees the sciences as *sources* for the solution of specific theological problems, and the third subordinates the first two to the researcher’s *mental attitude*: SET is now a reminder/disposition/mindset of the researcher as she uses the sciences as specific sources/tools for her theological work”. In view of this three-stage model, it might seem that the question of the sources of theology is only of transitory importance and non-essential to the SET movement.

Despite the outlined differences, however, there is a consistent and continued focus on “sources” of theology, except in their earliest publication, where Perry and Lane Ritchie (2018, p. 1085) talk about Scripture, tradition, experience, and reason as “principles of verification” instead—a terminology they later drop. Perry and Leidenhag (2021, p. 248) speak already of the sciences as “a *source* for theology alongside Scripture, tradition, reason and experience”, in line with the terminology used in their latest publication outlined above.¹² What is more, even though they admittedly do not speak of sources in their first publication, the context is also and consistently the Wesleyan Quadrilateral, as the quotations above show. I think that (SET₁) is therefore an accurate rendering of SET, which in a Catholic context could be further specified as (SET₂), where I have omitted the “only if” clause to allow for other, and especially non-Catholic, interpretations of sources of theological knowledge:

(SET₁) Theology is science-engaged if and only if science is, and is used as, a source of theological knowledge.

(SET₂) Theology is science-engaged if science is, and is used as, a *locus theologicus* (*alienus*), that is, a source of theological knowledge (shared with others).

In short, according to this stipulation, SET is a form of “*x*-engaged theology”, where “*x*” denotes any of the theological sources. Theology is science-engaged if and to the extent that science is, and is used as, a source of theological knowledge, or a (foreign) theological place, but theology is for the most part based on other sources of theological knowledge, or other and especially proper theological places. The term “engaged” means that the theological source denoted by “*x*” is used as such, i.e., in practice, and not only as a theoretically available but actually untapped source.

3. Is Science-Engaged Thomism a (New) Form of Thomism?

Given these definitions of SET, I will now turn to the question of whether SETh constitutes a form of Thomism, and if so, whether it is a new form of Thomism. To this end, I define SETh as follows:

(SETh₁) Thomism is science-engaged if and only if science is, and is used as, a source of knowledge.

Above, I have indicated that “Thomism” here is meant to include both theology and philosophy, which is specified in (SETh₂):

(SETh₂) Thomistic theology or philosophy is science-engaged if and only if science is, and is used as, a source of theological or philosophical knowledge.

Focussing on Thomistic theology, we could then state:¹³

(SETh₃) Thomistic theology is science-engaged if science is, and is used as, a *locus theologicus (alienus)*, that is, a source of theological knowledge (shared with others).¹⁴

In his paper “Science and Religion in the Thomist Tradition”, historian of science William A. Wallace remarked in 2001: “Among Catholics [. . .] the general attitude toward this topic [of science and religion, above referred to as science and theology]¹⁵ seems to be lack of interest. This is especially true of those who identify in some way or other with the Thomistic tradition” (Wallace 2001, p. 442). Similarly to Haldane’s (2004, pp. 3–4) observation that Thomism has declined in history when neglecting rival philosophical systems and has experienced a renewal when engaging with other traditions, Wallace (1968, pp. 82–83) calls for a renewed engagement of Thomists with the sciences that promptly addresses, critically evaluates, and eventually incorporates relevant scientific findings. In doing so, Wallace (1968, p. 83) argues, Thomists cannot be “content to remain at a very general level, concentrating on metaphysics, and neglecting the specialized disciplines” of the various sciences, as this would eventually lead to “a divorce between philosophy and science” and, by consequence, to a “theology [. . .] completely untouched by scientific progress”. This line of argument is reminiscent of SET and its emphasis on specificity and locality; SET is not a general and abstract but a specific and fine-grained activity.

In this section, I will argue that SETh is a form of Thomism, although not necessarily a new form of Thomism. The general question of the relationship of Thomism to the sciences is by no means new in Thomism. For example, there was a notable controversy as to the relationship of metaphysics to natural philosophy and the natural sciences in twentieth-century Thomism. Following Henry Koren, Edward Feser (2019, pp. 7–8) distinguishes three main schools: (1) River Forest Thomism, according to which both science and natural philosophy form one species of knowledge distinct from, and providing the basis for, metaphysics; (2) a Thomism following Jacques Maritain, according to which science and natural philosophy are two distinct species of knowledge in the same genus that is distinct from metaphysics;¹⁶ and (3) some Neo-Thomistic manuals, according to which science and natural philosophy are of a distinct genus, where the latter is viewed as a subset or branch of metaphysics.

Among these three schools, River Forest Thomism stands out for its engagement with the sciences. Its main proponents were William H. Kane, Raymond J. Nogar, Benedict M. Ashley, James A. Weisheipl, and William A. Wallace. The school’s engagement with the sciences was motivated by their common conviction that “the construction of a sound metaphysics must be preceded by a sound understanding of natural science, as interpreted in light of an Aristotelian philosophy of nature” (Feser 2009a). Thus, the proponents of River Forest Thomism were “speculatively focused on the importance of natural philosophy, both for engaging with contemporary science and for establishing the proper basis of metaphysics” (Reese 2008, p. 13).

In his recent analysis of River Forest Thomism, Philip-Neri Reese has identified the following four “core theses” as definitive for, or constitutive of, the school:¹⁷

- (1) The purely natural sciences are the parts of natural philosophy.

- (2) The mathematical sciences are not the parts of natural philosophy, though their subjects overlap.
- (3) Natural philosophy and metaphysics are distinct and autonomous sciences, with the former preceding the latter in the order of learning.
- (4) Natural philosophy admits of multiple stages of inquiry, each with its corresponding degree of certainty (i.e., it sometimes proceeds observationally, sometimes dialectically, sometimes demonstratively, etc.).

(Reese 2024, p. 6)

According to these four core theses, the natural sciences constitute, to the extent that they are not mathematized, the parts of, or are identical to, natural philosophy, and to the extent that they are mathematized, they are formally but not materially distinct. In other words, natural philosophy has the same subject matter as the mathematized natural sciences but investigates it from a different perspective; the way in which the two disciplines study the same content differs. By contrast, metaphysics is thought to be both formally and materially distinct from natural philosophy and, by extension, from the natural sciences. River Forest Thomism thus ties natural philosophy closely to the natural sciences, but not metaphysics, which is distinct from both and builds, in the order of learning, on natural philosophy. The relation between natural philosophy, the natural sciences, and metaphysics, according to River Forest Thomism, can be summarised as follows:

- (1) Natural philosophy is neither formally nor materially distinct from the non-mathematized natural sciences.
- (2) Natural philosophy is formally, but not materially, distinct from the mathematized natural sciences.
- (3) Natural philosophy is both formally and materially distinct from metaphysics.

(Reese 2024, p. 3)

It should be noted that these remarks are not commonly accepted in all versions of Thomism. Nonetheless, they bolster my thesis that SETh is a form of Thomism but arguably not a new form of Thomism. Their significance consists in the fact that, at least according to one school of Thomism, namely, River Forest Thomism, not only metaphysics but also natural philosophy is an essential part of Thomism, and so are, by extension, the natural sciences, if not formally, then at least materially. As stated above, natural philosophy establishes the proper basis of metaphysics, and it can do so only in dialogue with the sciences. Therefore, on this view, Thomism is, and needs to be, science-engaged by the very fact that firstly, natural philosophy is a foundational part of Thomistic philosophy, and secondly, natural philosophy and the sciences are considered either formally and materially identical or formally but not materially distinct. This would arguably make science a source of knowledge for philosophy. And if metaphysics, which is widely considered the first philosophy, is in turn essential to, and a preparation for, Thomistic theology, and is as such, in the order of learning, posterior to, and so in a sense built on, natural philosophy, then science would arguably also be a source of knowledge for theology. To put it crudely, theology makes use of philosophy which, at least to some extent, in turn is connected to, and incorporates, the sciences. If this is the case, then at least one form of Thomism would qualify as SETh, as defined above.

Reese (2024, p. 14) goes so far as to argue that *all* Thomists should be River Forest Thomists if this amounts to a commitment to the four core theses outlined above: “there should be little-to-no debate about whether all Thomists should be River Forest Thomists [committed to the core theses (1) to (4)]—they should”. At the very least, however, Thomists should have that debate, Reese contends, because it would “have the effect of pushing Thomism beyond its usual boundaries and encouraging new conversations between Thomists, scientists, philosophers of science, and contemporary metaphysicians”. My claim here is more modest in two respects, firstly because I am trying to identify and establish SETh as *one* version of Thomism, and secondly because SETh entails only that science is, and is used as, a source of knowledge in Thomism, namely, a source of theologi-

cal or philosophical knowledge. In contrast to the defining, but not uncontroversial, core theses of River Forst Thomism, the defining features of SETh may well be compatible with other forms of Thomism. SETh is thus not necessarily limited to River Forest Thomism, the latter being offered here only as an example of the former.¹⁸

Having discussed one influential Thomistic view on the relationship between the sciences and Thomistic philosophy, indicating that the engagement with the sciences is by no means new in Thomism, I now wish to turn to the question of the relationship between theology and the sciences. In the following, therefore, I will present an argument for SETh as it applies to Thomistic theology. If theology is formally but to a considerable extent not materially distinct from other sciences—that is, if the subject matter of theology is God and *everything* insofar as it relates to, and is revealed by, God—then theology and these sciences, including the natural sciences, are materially linked. In other words, according to Aquinas' understanding of theology, highlighted in the footnotes of the argument below, theology and the sciences may overlap to a considerable extent in their subject matter, although not in their methodology. Now, admittedly, the sciences Aquinas is referring to are different from the modern sciences, but what he says about theology and the relationship of theology to these sciences can arguably be extrapolated to other disciplines, including the sciences in the modern sense. If this is so, then it seems reasonable for theology also to take into consideration what other sciences, including the modern sciences, have to say about these matters, although they do not consider them under the formality of being related to, and revealed by, God—which would be the specific, distinct, and unique formality of theology in the Thomistic tradition. Hünemann (2003a, p. 228) seems to agree with this view when he states: “There are countless theological questions that overlap—not formally but *materialiter*—with problems that are being scientifically researched and elucidated. It is obvious that the corresponding scientific results need to be taken into consideration by theologians”.¹⁹ Here is the argument:

- (1) The subject matter of theology is not limited materially but only formally, including God and everything insofar as it relates to, and is revealed by, God.²⁰
- (2) The sciences cover materially part of the subject matter of theology, although under a different formality.²¹
- (3) Understanding the subject matter of theology under a different formality provides a source for theology.
- (4) Therefore, to the extent that the sciences cover, and provide an understanding of, the same subject matter as theology materially, but under a different formality, the sciences provide a source for theology.
- (5) If the sciences provide a source for theology, then theology should engage with them.
- (6) Therefore, theology should engage with the sciences to the extent that they cover, and provide an understanding of, the same subject matter materially, but under a different formality.

And since theology that engages with the sciences as a source for theology, or more precisely, as a source of theological knowledge (shared with others) is, according to both (SET₁) and (SET₂), science-engaged theology, therefore, Thomistic theology should to some extent be science-engaged. As with SET, this conclusion is not meant to indicate that Thomism should be science-engaged all the time, but that it should *also* be science-engaged, in appropriate cases, specified below—just as Thomism should, for instance, be at times Scripture-engaged, Tradition-engaged, or philosophy-engaged.

I take it that in the present context, premise (3) is most in need of support—why would matters that a particular science treats under a different respect than theology does be relevant to theology, if what makes theology a unique and unified discipline is the fact that it treats everything precisely as it is related to, and is revealed by, God? Andrew Davison (2022a, p. 19) suggested the following reply: “If the task of theology is to consider *everything*, albeit under the aspect of its relation to God, then attention to the natural sciences will inevitably be part of theology’s task, since the sciences offer a perspective on the nature of reality—on that about which we want to think theologically—for which

nothing else can stand-in". The question arises, however, as to why theology needs this unique perspective in the first place, if the formality of theology and the sciences offering this unique perspective is different. The point of contention is why, "if the work of the theologian is to think about everything as it relates to God, if it is her task to think about creatures in light of God, [. . .] it matters that she think rightly about creatures themselves" (Davison 2022a, p. 21).

What we think about creatures—that is, everything that is created by God, including the empirical world—as investigated by relevant disciplines other than theology, is significant for theology. This is precisely what is meant by premise (3): Understanding the subject matter of theology under a different formality provides a source for theology. Indeed, Aquinas holds that "it is evident that the opinion is false of those who were saying that it makes no difference to the truth of the faith what anyone thinks about creatures, provided that one thinks rightly about God [. . .]: for error about creatures overflows into a false opinion about God" (SCG II.3).²² Thus, one way of responding to the question at hand is to point out that Aquinas holds that the consideration and understanding of creatures, which reflect the work of God, is useful and, he claims, even necessary for the instruction of faith and the refutation of errors about creatures that are contrary to faith (SCG II.2–3).²³ Aquinas states that "those [things] which pertain [. . .] to any creatures whatever fall under faith insofar as by these we are ordered to God" (ST II-II.1.1 ad 1).²⁴ Understanding creatures, in their nature, is thus relevant to theology. And this understanding of creatures, in their nature, is also provided by the sciences.²⁵ On this view, then, philosophy—and we may add today, also science, albeit in a different way—deals with creatures as such, or with things according to their nature—or at least with certain properties indicative of their nature—whereas theology deals with creatures insofar as they are related to God. In one sense, then, the focus of theology is primarily on God, and it views creatures not in themselves but only in relation to God, whereas the focus of philosophy—as well as science—is primarily on the created reality, and it views God not in himself but only in relation to creatures. But, on Aquinas' view, it would be strange if the two perspectives never met, or at least never approached each other (SCG II.4).

The point in question—why understanding the subject matter of theology under a different formality provides a source for theology—is expressed well by Hünermann (2003a, p. 275) when he argues that the foreign theological places, such as the sciences, are essential for theology and the act of, and reflection on, faith, to the extent that the reality described in these points of reference gives additional, concrete content to doctrinal statements: "Only by including the reality of science and philosophy, society and culture, religions and history with their respective truths does faith prove itself in its *infallibilitas* as a *participatio* in God as first truth".²⁶ And, I would add, if the sciences are employed to help concretise the content of doctrinal statements, then science becomes a critical corrective in the sense that points of inconsistency, incoherence, or simply a lack of applicability to experience more generally become apparent, allowing for the necessary adjustments.²⁷

In any case, for Aquinas, the truth of natural reason and of faith, who have their common source in God, cannot be opposed (SCG I.7). As the encyclical "Fides et Ratio" (1998) emphasises: "Thomas had the great merit of giving pride of place to the harmony which exists between faith and reason. Both the light of reason and the light of faith come from God, he argued; hence there can be no contradiction between them. More radically, Thomas recognized that nature, philosophy's [and—we might add, extending reason to include the sciences—also the sciences'] proper concern, could contribute to the understanding of divine Revelation. Faith therefore has no fear of reason but seeks it out and has trust in it. Just as grace builds on nature and brings it to fulfilment, so faith builds upon and perfects reason. [. . .] This is why the Church has been justified in consistently proposing Saint Thomas as a master of thought and a model of the right way to do theology" (FR, 43).

In summary, in light of the discussion, SETh would seem to have a claim on being a form of Thomism, although it may not be a new form of Thomism, as many versions

of Thomism uphold the unity of faith and reason and include under “reason” not only philosophy but also science. If these forms of Thomism take science to be a source of (theological or philosophical) knowledge and make use of it, however, they will qualify as science-engaged, on the proposed definition. What is perhaps new is the explicit emphasis on the importance of engaging the sciences, and the extent to which this is practised, precisely as a source of (theological or philosophical) knowledge, given both our expanded scientific understanding and our current scientific worldview.

4. Examples of Science-Engaged Thomism

In agreement with Wallace’s verdict cited above, Thomas Joseph White (2019, pp. 196–98) has stated that there is an urgent need in both Catholic theology and Thomism to engage with the sciences, which he identifies as one of today’s main challenges. In order to make progress in this area, he encourages “a younger generation of Thomists to weigh in on these [scientific] topics philosophically and theologically” (White 2019, p. 198), especially in the spirit of River Forest Thomism, which, White (2019, p. 197) claims, held that “Thomism could offer a needed grounding to the study of modern physics, as well as an appreciation [of] the role of evolutionary biology and psychological neuroscience for an understanding of the human being, while still underscoring the uniqueness of the spiritual principle in the human person, and the importance of metaphysics and a philosophical understanding of [the] doctrine of creation”.

In response to Wallace’s observation over twenty years ago, cited above, that, for a significant time, Thomism has, to a considerable extent, lacked any substantial engagement with the sciences, as well as his and White’s call for a renewal of the relationship between Thomism and the sciences, I shall now show that in recent years there has been a growing interest within Thomism in a renewed engagement with the sciences, which could be described as SETH.

There are undoubtedly many Thomists and also Neo-Thomists who have engaged, in one way or another, with the sciences of their time.²⁸ Indeed, Thomas Aquinas himself did so on many occasions.²⁹ For the present purpose of exemplifying SETH, however, I wish to start with two Thomists that have been instrumental for the engagement with the sciences within Thomism in the current science and theology discourse: William E. Carroll and Michael J. Dodds.

On one hand, Carroll argued in various publications on the doctrine of creation in Aquinas that creation is not, and does not imply, change, but that science essentially deals with and is about change, as, for example, in his *Creation and Science: Has Science Eliminated God?* (Carroll 2011b). For this reason, he argued in particular that both contemporary models in cosmology (e.g., Carroll 1988, 1998) and theories of evolution (e.g., Carroll 2010, 2013, 2015), or the principle of inertia (Carroll 2011a), do not conflict with the philosophical dimension of creation *ex nihilo*. The following is a representative statement of his thesis: “The key to Thomas Aquinas’ analysis is the distinction he draws between creation and change, or as he often said: *creatio non est mutatio* (creation is not a change). The natural sciences, whether Aristotelian or contemporary, have as their subject the world of changing things: from subatomic particles to acorns to galaxies” (Carroll 2007, p. 686).

On the other hand, Dodds argued in his work, culminating in his influential book tellingly titled *Unlocking Divine Action: Contemporary Science and Thomas Aquinas* (Dodds 2012), that the nature of causation needs to be revisited in order to make progress in understanding divine action. He showed how divine action was locked by a narrow understanding of causation in modern science, and purportedly unlocked by different forms of causation described in contemporary science, at times remarkably reminiscent of an Aristotelian (or Thomistic) view of causation. His main point was, however, not only that these new developments call for a retrieval of a more Aristotelian (or Thomistic) understanding of causation, but more importantly that an unlocking of divine action can ultimately only be successful if divine action is not conceived in univocal terms, if the essential difference

between divine and natural or creaturely causation is upheld, for example, in terms of primary and secondary causation.

Now, admittedly, their respective contributions could be regarded as merely negative, as they consist primarily in disentangling seemingly entangled questions in philosophy and theology. At least as far as a Thomistic framework is concerned, their argument was that the philosophical analysis of the doctrine of creation *ex nihilo* is *prima facie* affected neither by cosmology nor by biological evolution, and that science is concerned with secondary causes—that “science gives an account of the world in terms of natural causes (what Aquinas would call secondary causes)” (Dodds 2017, p. 268)—while divine action is primary causation. But in showing these questions not to be entangled after all, they went a considerable way towards showing what it would mean for them to be entangled, thus not only engaging with the sciences—from quantum tunnelling, to autopoiesis, to Big Bang cosmology in the case of Carroll, and from emergence, to teleology, to quantum physics in the case of Dodds—but also bringing science very much into the Thomistic agenda. In doing so, they have paved the way for later discussions and various contemporary Thomistic contributions in the science and theology discourse.

These topics were taken up and further developed, among others, by two of their doctoral students. Ignacio Silva started with the topic of quantum physics and divine action (Silva 2009), specifying in subsequent works in particular the nature and importance of primary and secondary causation in relation to indeterminism in the sciences for the doctrine of providence (Silva 2022), recently also by relating the classical distinction to topics in the philosophy of science (Silva 2024), and has now set his research agenda on analysing how Aquinas and Neo-Thomists have made use of the sciences as a source of knowledge, pointing out its relevance for the current debate (Silva forthcoming). Mariusz Tabaczek, on the other hand, worked on the phenomenon of emergence in philosophy of science and metaphysics (Tabaczek 2019), subsequently applying it to the question of pantheism and divine action (Tabaczek 2021), and has since worked extensively on various topics related to biological evolution. This research culminated in his recent book *Theistic Evolution: A Contemporary Aristotelian-Thomistic Perspective* (Tabaczek 2024), in which he argues not only for the compatibility of Thomistic philosophy and theology and the modern synthesis as well as the extended evolutionary synthesis, but also that the former renders the latter metaphysically intelligible. More important for the present purpose, however, is the fact that he addresses various entangled questions in the course of the argument, including how species in a metaphysics of evolutionary transformations map onto various species concepts in contemporary biology (a case of what Perry and Leidenhag would consider a concept entanglement) or whether or not the theological doctrine of original sin entails the scientific theory of monogenism (a case of what Perry and Leidenhag would call conjunctive entanglement).

Another prominent example would be molecular biologist Nicanor Austriaco, who has published on various issues in the field of evolution and Thomism, where he discusses traditional Catholic teachings on human nature and origin in the context of evolutionary biology. In this context, Austriaco has, for instance, appropriated systems biology for topics such as immediate hominisation (Austriaco 2004) and the specification of biological sex in the human species (Austriaco 2013),³⁰ and presented theological fittingness arguments in light of evolution for the historicity of the Fall (Austriaco 2015), the historicity of Adam and Eve (Austriaco 2018), and for the evolution of *Homo Sapiens* (Austriaco 2019). A popular version of these and similar arguments was published by Austriaco and other Dominican friars of the Province of St Joseph, including particle physicist Thomas Davenport, who might be considered another science-engaged Thomist, as *Thomistic Evolution: A Catholic Approach to Understanding Evolution in the Light of Faith* (Austriaco et al. 2016). A new volume with scholarly contributions provisionally titled *A Catholic View on Evolution: New Perspectives in Thomistic Philosophy and Theology* (Austriaco forthcoming) will appear in due course.

One of the contributors to this volume is Daniel De Haan, who in his work (De Haan 2017, 2018, 2019, 2022) discusses, critically reflects on, and incorporates insights from both neuroscience and psychology for an Aristotelian and Thomistic philosophical anthropology, especially psychology. Another example would be Robert Koons (2018a, 2018b, 2019, 2020), who has been working, together with William Simpson (Simpson 2021, 2023; Simpson and Pemberton 2022), towards a hylomorphic interpretation of quantum theory, and recently presented a defence of Aquinas' Aristotelian philosophy of nature (Koons 2022). Edward Feser has also brought Aristotelian natural philosophy (Feser 2019) and Thomistic metaphysics (Feser 2014) into conversation with the sciences and philosophy of science. And Timothy Pawl has recently started working on the intersection of virtue ethics and psychology (Pawl 2021, 2023; Pawl et al. 2021; Pawl and Schnitker 2022).³¹

What they all have in common is an emphasis on the importance of the sciences as a source of (theological or philosophical) knowledge for Thomism, albeit in different ways. In closing, then, I would like to distinguish two different aims of SETH that can be identified in the literature:

(SETh_{a1}) The aim of Science-Engaged Thomism is to demonstrate the compatibility of Thomism and science, in the sense that any alleged contradiction between the two is shown to be false.

For the first camp, the situation is as follows. If there is a conflict in the sense of a contradiction between Thomism and science, then either (1) this conflict is only apparent and can eventually be resolved by showing that the conflict is not real but only apparent; or (2) one of the two must be revised—either Thomism or science must be corrected, or reinterpreted.

(SETh_{a2}) The aim of Science-Engaged Thomism is not only to demonstrate the compatibility of Thomism and science, but also to apply Thomistic principles to make science or science-related claims intelligible from a philosophical or theological point of view.

For the second camp, the situation resembles the one described above, although they differ in that it is not considered sufficient to rule out negatively any sort of real conflict between Thomism and science; one must also be able to establish positively what is gained by accepting and applying Thomistic principles. In a sense, on this second view, the coherence of beliefs must be increased, not just their consistency.

Some have suggested that only an engagement of the latter kind is substantive enough to count as SET, while others would disagree. Jonathan Jong (2021, p. 484), for instance, sets the following standard: "There is a little game I like to play when reading work that alleges to be science-engaged theology: I imagine away the scientific theories and discoveries mentioned in the work, and try to work out what theological difference that makes. This helps me to ascertain whether the science is playing a substantive or merely a superficial role". And he continues to say that "claims that some scientific theory or discovery is 'consistent with' some theological position are too weak to be interesting". The latter would perhaps count as what he calls "science-inspired theology", where "science is providing the impetus [...] to engage with a philosophical or theological question". (Jong 2021, p. 485)

According to the definition presented above, however, both (SETh_{a1}) and (SETh_{a2}) count as SETH, precisely to the extent that they recognise and use science as a source of knowledge—or, in the case of Thomistic theology, as a (foreign) theological place (shared with other disciplines)—and this engagement can take various forms.³² One of the reasons why other theologians, including many Thomists, are more relaxed about the requirements and nature of this engagement with the sciences is the mediating role of philosophy; they allow for a mediation of science through philosophy: theology's engagement with the sciences may be mediated, at least to some extent, through philosophy, including philosophy of science, although it is difficult to determine where exactly the limit of this mediation would be for it still to count as an engagement with the sciences.³³

5. Science-Engaged Thomism and Science-Engaged Theology: Differences and Objections

Given this outline, SETH may at first appear to be a form, species, or subset of SET, where the term “Thomism” specifies the kind of theology that is science-engaged. But according to (SET₁) and (SETh₂), SET is a form of theology, whereas SETH includes both theology and philosophy. In one sense, then, SET is broader than SETH, as it potentially includes all forms of theology if and to the extent that they are science-engaged. In another sense, however, SETH is broader than SET, insofar as it includes not only theology but also philosophy. In any case, it seems fair to conclude that the label “Science-Engaged Thomism” has its setting, or *Sitz im Leben*, in the current science and theology debate. As the last section has indicated, however, unlike the label introduced here, the approach of SETH is arguably not a result of the SET movement.

Before pointing out further differences between SETH and SET, I would like to address a related objection. The objection states that “Science-Engaged Thomism” is an oxymoron, that is, a juxtaposition of contradictory concepts, namely, “science-engaged (theology)” and “Thomism”, amounting to a contradiction in terms. To borrow the words of Brian Shanley (1999, p. 125) with which he objects to the concept of Analytical Thomism: “Can one really be both a Thomist *and* [a science-engaged theologian]? Are the basic philosophical commitments of the one compatible with those of the other?”³⁴ Above, I defined SET as follows:

(SET₁) Theology is science-engaged if and only if science is, and is used as, a source of theological knowledge.

For the Catholic context, I have specified the definition as follows:

(SET₂) Theology is science-engaged if science is, and is used as, a *locus theologicus (alienus)*, that is, a source of theological knowledge (shared with others).

And I have suggested a parallel understanding of SETH, along the following lines:

(SETh₁) Thomism is science-engaged if and only if science is, and is used as, a source of knowledge.

(SETh₂) Thomistic theology or philosophy is science-engaged if and only if science is, and is used as, a source of theological or philosophical knowledge.

(SETh₃) Thomistic theology is science-engaged if science is, and is used as, a *locus theologicus (alienus)*, that is, a source of theological knowledge (shared with others).

So far, there is no contradiction in terms between SET and Thomism, or at any rate not between SET and SETH. Now, one could argue that SETH might nevertheless be an oxymoron, in the sense that further commitments of SET are in contradiction with essential elements of Thomism. To answer this question, we need to turn to these further characteristics of SET and see if any of those contradict essential elements of Thomism.

Above, I pointed out three additional characteristic features of SET. (1) As a theological discipline, SET is appropriate only in entanglement cases, (2) it stays local and specific, and (3) questions of methodology are put aside. According to the definition of SET proposed and defended above, none of these features are essential to, or constitutive of, SET; they are not part of the definition of either (SET₁) or (SET₂). Nonetheless, these features are commonly held assumptions among proponents of SET. In what follows, I will call them “auxiliary assumptions”. I will comment on them in turn.

Concerning the first auxiliary assumption—that (1) as a theological discipline, SET is appropriate only in entanglement cases—I have already indicated that there is a similarity between SETH and SET in that both engage with the sciences in entanglement cases, whenever the sciences are a relevant source for theology (or philosophy). Returning to Cano once more, we might make this point as follows. If science is a *locus theologicus*, it is a *locus theologicus alienus*, and as such firstly one among many theological sources, and secondly as a foreign place, it is not among the first sources. In fact, if one upholds the

distinction between proper and foreign theological places, at least all the proper theological places would come first. This is a reminder that science is important and should be recognised as a source of theological knowledge, but also to see science-engaged theology in the proper context of theology as such. To put it in Aquinas' terms, there is a hierarchy in theology; theology deals first with God and then with creatures, insofar as they are related to God—and this hierarchy should be reflected in the sources of theology: theology is primarily based on revelation.

What is more, it might even be argued that auxiliary assumption (1) is further bolstered by SETh. In their article "Aquinas's Science-Engaged Theology", Ignacio Silva and Gonzalo Recio have recently suggested that Aquinas may help us in thinking through the prospects and pitfalls of SET—that he is "an historical exemplar of what is at stake in contemporary discussions on science-engaged theology" (Silva and Recio 2023, p. 1). In light of their analysis of various instances of Aquinas making use of the "sciences" of his time, they conclude, on the one hand, that one may interpret "what Aquinas was doing as engaging theology with the best knowledge of the natural world for attempting solutions for discrete theological problems" (Silva and Recio 2023, p. 2). Building on the complexity thesis of John H. Brooke, Silva and Recio (2023, p. 11) also emphasises, on the other hand, the complexity of the ways in which theology and especially Thomism can engage with the sciences: "by looking at the examples of engagement in the work of [...] Thomas Aquinas, one can enrich the contemporary idea of science-engaged theology with the subtlety of diversity in how theology can engage with the natural sciences [...]. Aquinas's examples show that the very basic method that Perry and Leidenhag pose as a guidance for science-engaged theology, namely that theologians are bold in asking empirical questions of the natural sciences, opens the path to a large array of possibilities". In other words, Aquinas was doing SET, or SETh, but the manner in which he did so shows that there is a multiplicity of ways of doing so. According to Silva and Recio (2023, p. 11), in Aquinas one finds a variety of different kinds of engagement with the "sciences", including cases in which an answer to a theological problem (1) is informed by, and at least partially drawn from, a scientific statement; (2) is supported by a scientific statement, where the answer itself is initially drawn from other sources of theological knowledge; (3) is comparatively related to a scientific statement, aiming at a deepened understanding of at least one, if not both or all, of the relata; or (4) involves further philosophical reflections about the nature, scope, and justification of the scientific statements under discussion. Even if one disagrees about the details of their proposal, the point they make is that the entanglement cases are manifold, which strengthens the link between Thomism and the first auxiliary assumption of SET.

Turning to the second auxiliary assumption—that (2) SET stays local and specific—Harris (2023, p. 15) explains: "SET is uncompromisingly theological and deals with specific and well-defined problems rather than the essentialised and grandiose claims of 'science' versus 'religion'". Peter Harrison (2021, p. 477) seems to agree when he states: "This appropriation of bite-sized chunks of individual sciences enables a different kind of activity—not one in which 'science' exercises authority over theology, but rather one which explores how particular discoveries or trends in specific sciences can serve as a source for theological reflection. Science-engaged theology thus assumes a multiplicity in the sciences that in some previous treatments had been masked by the general category 'science'".

Now, if staying local and specific means prioritising locality and specificity, in the sense that SET paradigmatically deals with specific and well-defined problems and acknowledges a multiplicity in the sciences, then the auxiliary assumption (2) can easily be incorporated into SETh. If, however, this commitment to a fine-grained activity also involves the exclusion of a philosophical and theological integration of these localised and specific findings into an overall and holistic picture, or likewise, if it involves the exclusion of an interpretation of these findings in light of this bigger picture, then SET and SETh will part ways. In other words, SETh will in many cases start and operate locally and specifically, but that does not mean it must necessarily stay local and specific, to the

exclusion of a holistic view. This difference becomes most apparent in connection with the third auxiliary assumption.

The third auxiliary assumption is that (3) SET explicitly sets methodology aside. [Perry and Lane Ritchie \(2018, p. 1086\)](#) set up the very project of SET thus: “But what would happen if we set aside methodology, just for a minute, and start with some particular claim that is at home in one or another specific subdiscipline, and then work out, as needed, points of methodology on an *ad hoc* basis. This would be Science-Engaged Theology”. Two proposals are put forward here: first, to set aside methodology and start engaging with the sciences without any explicit methodology, and second, to provide a methodology *ad hoc* if needed. But setting aside methodology in any explicit manner means adopting a methodology implicitly. For, arguably, one cannot do theology or philosophy—or any other scientific discipline, for that matter—be it science-engaged or otherwise without any methodology altogether. And it seems preferable to acknowledge openly one’s methodological commitments, especially in an interdisciplinary dialogue, rather than to assume a methodology implicitly without any reflection. What is more, if one acknowledges the general need for methodology, at least at some point, as even the *ad hoc* approach does, then it seems more reasonable to establish one’s methodology in a reflected, coherent, and consistent manner, fit for purpose, and not simply *ad hoc*—which is not to say that some of the methodology cannot potentially be developed or adjusted along the way.

This demand not simply to sidestep issues of methodology seems to be particularly a requirement for a theology that aspires to be a systematically coherent and consistent reflection on the whole of reality. Contrary to [Perry and Lane Ritchie \(2018, p. 1089\)](#), who advocate for forms of SET that “temporally set aside questions of methodology and see where we get”, as a way of moving forward the discipline of science and theology in general, most proponents of SETh would reject, I assume, this stance, for reasons similar to the ones given above. Together with a variety of scholars generally sympathetic to the SET movement ([Harrison 2021](#); [Grey 2021](#); [Harris 2023](#)), they would emphasise that methodology and metaphysical questions cannot be set aside or sidestepped altogether in SET, and particularly not in SETh.

In other words, SETh does not sit well with what [Silva and Recio \(2023, p. 15\)](#) call a “piecemeal” approach, “solving particular and concrete theological puzzles without a greater theological project in mind”. Such a piecemeal approach without a theological rationale carries the risk of giving way to an eclectic bundle of particularised and atomised views. The methodology of theology matters, and so do questions of methodology in the science and theology discourse. This brings us finally back to auxiliary assumption (1) and the view that science matters, but so do other sources of theological knowledge. As [Silva and Recio \(2023, p. 15\)](#) emphasise, the coherence and consistency of a holistic theological project, tapping into sources other than the sciences, is important especially in light of the nature of scientific discourse: much of the science used by Aquinas is outdated by now, and we might expect the same to be true of at least part of today’s science. So, it is rational to use science, but also to embed it in an overall project that is based on other sources too. If the analysis presented by Silva and Recio is correct, then perhaps Aquinas himself could provide a way forward in the contemporary discussion, by showing “that one can engage with the natural sciences at a local level, and by doing that also contribute to a larger theological project, and hence engage at a more general theological level” ([Silva and Recio 2023, p. 12](#)).

In summary, auxiliary assumption (1) is consistent with SETh, (2) is compatible with SETh, in at least one particular interpretation, but might be incompatible with other interpretations, while (3) does not sit well with SETh. If, however, as argued, features (1) to (3) are commonly held auxiliary assumptions, but not essential commitments constitutive of SET, then there is no contradiction between SET and SETh. Therefore, even on the second reading, SETh is not an oxymoron.

By way of conclusion, I would like to point out that an important function of SET is also fulfilled by SETh. [Harrison \(2021, p. 47\)](#) notes that SET wards off three common

pitfalls in the science and theology discourse: (1) an anti-theological view, according to which “science always trumps theology”; (2) an anti-scientific view, according to which science has either no legitimacy or nothing important to say to theology; and (3) a total independence view, according to which science and theology cannot possibly have any point of contact. All of these features, I argue, can also be achieved through a form of SETh. In contrast to (1), SETh recognises a multiplicity of sources of knowledge, among which the sciences are but one and arguably not among the most important theological sources, to wit, the so-called proper places; against (2), SETh recognises the sciences in their multiplicity as a source of theological knowledge, that is, a place or source from which theological arguments can be derived; and it rebuts (3), by establishing an explicit connection between science and theology that turns out to be relevant in many cases, at least as far as theology and philosophy are concerned. In this sense, then, and because of the differences despite many similarities, SETh could be viewed as a complementary approach to SET.

6. Conclusions

In this article, I have discussed a form of Thomism that explicitly recognises and uses the sciences as a source of knowledge in both theology and philosophy in the Thomistic tradition. I have also suggested that although SETh is a form of Thomism, it has no claim to be an entirely new form of Thomism, as other versions of Thomism have also recognised and used the sciences as a source of theological and philosophical knowledge. Recently, [White \(2019, p. 197\)](#) has remarked that it is “quite unclear [...] what philosophy [and—we might add—theology] might be employed to rightly interpret the discoveries of the modern scientific revolution”. The controversy has long since begun but is still open. Only time will tell how it ends, but Thomism, especially SETh, still seems to be one viable option.

Funding: This publication was made possible through the support of Grant 62684 from the John Templeton Foundation. The opinions expressed in this publication are those of the author and do not necessarily reflect the views of the John Templeton Foundation.

Data Availability Statement: No new data were created or analyzed in this study. Data sharing is not applicable to this article.

Conflicts of Interest: The author declares no conflict of interest.

Notes

- ¹ More recent schools of Thomism include Neo-Scholastic Thomism, Existential Thomism, River Forest Thomism, Transcendental Thomism, Lublin Thomism, and Analytical Thomism, to list a few. For a short overview of them, see [Feser \(2009a, 2009b\)](#); [Reese \(2008\)](#); [Ashley \(2006, pp. 44–54\)](#); [Haldane \(2004, pp. 3–14\)](#); for a more detailed discussion of Thomism and versions of Thomism, see [Cessario \(2003\)](#); [Kerr \(2002\)](#); [Shanley \(2002\)](#); [McCool \(1994, 1989\)](#); [John \(1966\)](#); [McInerney \(1968\)](#). In this article, I will not attempt to define “Thomism”. If uncertain about the object of study, we could approach the phenomenon, as a first approximation, by following John [Haldane \(1997, p. 485\)](#) in understanding Thomism “as the set of broad doctrines and style of thought expressed in the works of St. Thomas and of those who follow him”.
- ² To the best of my knowledge, Ignacio Silva has coined the label “Science-Engaged Thomism” as part of a Templeton-funded project (Grant ID 62684). He used the term, for example, in an unpublished paper titled “Can a Thomist be a Harrisonian? Or Whether Thomists Live in the Past on Science and Religion”, which he presented online on 2 January 2022, at the Science, Religion and Rationality Workshop 2022 at the Universidad de La Frontera in Chile. For a short introduction to the discipline of science and theology, at times also labelled “science and religion”, see [De Cruz \(2022\)](#) and [Smedes \(2007, 2008\)](#).
- ³ The similarity is also indicated by the fact that SET too has been compared to an analytic approach, namely, Analytic Theology; see [Leidenhag \(2023\)](#) and [Page \(2023\)](#).
- ⁴ [Haldane \(2004, p. xii\)](#) states that “analytical Thomism involves the bringing into mutual relationship of the styles and preoccupations of recent English-speaking philosophy and the ideas and concerns shared by St Thomas and his followers”. Earlier, he described it as follows: “A broad philosophical approach that brings into mutual relationship the styles and preoccupations of recent English-speaking philosophy and the concepts and concerns shared by Aquinas and his followers” ([Haldane 1995, p. 875](#)); “*Analytical Thomism* [...] involves the bringing into mutual relationship of the styles and preoccupations of recent English-speaking philosophy and the concepts and concerns shared by St Thomas and his followers” (Lectures “Understanding Minds” and “Structuring Natures” (1992), cited in [Haldane \(2016, p. 305\)](#)); “Analytical Thomism is not concerned to appropriate St. Thomas for the advancement of any particular set of doctrines. [...] Instead, it seeks to deploy the methods and ideas

of twentieth-century philosophy—of the sort dominant within the English-speaking world—in connection with the broad framework of ideas introduced and developed by Aquinas” (Haldane 1997, p. 486). On this last point, Brian Shanley (1999, p. 126) notes that Thomism is traditionally understood to advance a particular set of doctrines: “How could one possibly identify oneself as a Thomist and not thereby be committed to certain particular doctrines of St. Thomas himself? Are there no basic doctrines ingredient in Thomism of any kind?”

⁵ Mark Harris (2023, p. 15) notes that “‘science-engaged theology’ [...] has risen to prominence with astonishing rapidity”. The term “Science-Engaged Theology” was, to the best of my knowledge, first introduced in writing by John Perry and Sarah Lane Ritchie (Perry and Lane Ritchie 2018, p. 1066). The work originated, like many other works in SET, from a Templeton-funded project (Grant ID 59023). For more details on the origin of the SET movement, see Davison (2022b).

⁶ Perry and Leidenhag (2023) variously state that in SET, the sciences, or “the local tools and products of the sciences”, ought to be (used as), count as, or are (among the), “sources for theological reasoning” (p. 1), “resource[s] for theological reflection” (p. 1), “theological source[s]” (p. 2), “sources of Christian theology” (p. 2), “source[s] in theology” (p. 4), “source[s] for theology” (p. 6), “sources of theology” (p. 7), “source[s] for theological research” (p. 15), “source[s] for theological insight” (p. 35), or “sources of theological reflection” (p. 63). Elsewhere, they comment: “we think the natural sciences are better conceived of as a *source* for theology alongside [the other theological sources of] Scripture, tradition, reason and experience” (Perry and Leidenhag 2021, p. 248).

⁷ “*Octavus [locus] ratio naturalis est, quae per omnes scientias naturali lumine inventas latissime patet*”. Unless stated otherwise, all translations from the Latin and German are mine.

⁸ Aristotle notes that the aim is “to find a line of inquiry whereby we shall be able to reason from reputable opinions about any subject presented to us, and also shall ourselves, when putting forward an argument, avoid saying anything contrary to it” (*Topics* I.1 100a20–22). Although there is considerable disagreement among scholars as to what exactly *topoi* are in Aristotle, we may approach the topic by saying, with Christof Rapp (2023, sect. 7), that, roughly speaking, “an Aristotelian *topos* (‘place’, ‘location’) is an argumentative scheme that enables a dialectician or rhetorician to construe an argument for a given conclusion. [...] The conclusion is either a thesis of the opponent that someone wishes to refute, or it is the assertion someone wishes to establish or defend”.

⁹ I omit here the “only if” clause used above to allow for other interpretations and forms of theological sources.

¹⁰ I am not entirely convinced that the distinction Perry and Leidenhag draw in their work is as straightforward as it may appear. For them, concept entanglement means that “the base concepts being used are entangled in multiple disciplinary conversations, even when they are (in any given moment) being used in a single discipline” (Perry and Leidenhag 2023, p. 58). This seems to presuppose, however, that these base concepts have a univocal meaning, which is not necessarily the case. In fact, some of the examples they give for entangled concepts, such as “matter” or “person”, do arguably not have a univocal meaning in various disciplinary conversations. At least some of these base concepts are used either analogically or equivocally. If they have analogical meanings, then the entanglement cannot simply be assumed, but must be explicated; if they have equivocal meanings, then they refer to different and entirely unrelated things, so that there is no entanglement. In this context, it is less clear why a base concept, such as “person” or “matter”, “requires the tools of more than one discipline to understand” it, which is the hallmark of entanglement as conceived by Perry and Leidenhag (2023, p. 58). To stick with their example, the question of why and in what way understanding the concept of matter in theology or metaphysics, where it commonly signifies potency, requires the tools of, say, physics, where the same notion basically refers to stuff, needs elaboration. Or why exactly does understanding the notion of person in, say, Trinitarian theology require the tools of, says, psychology? But not only do these analogical cases need further clarification, potential equivocal cases would also have to be excluded. For example, although the notion of bat is used in different disciplinary conversations—for example, in sports and biology—it is unreasonable to assume that the concept of bat in biology is relevant in understanding the notion of bat in sports; the tools of biology are irrelevant here because the notion of bat is used equivocally. In short, the fact that a term is used in multiple disciplinary discourses is not enough to establish an entanglement; the meaning of the employed term matters. If this is so, then concept entanglement, what counts as an entangled and non-entangled concept—a distinction they also use in their introduction of conjunctive entanglements—might be more complicated, which would also have consequences for conjunctive entanglements. In fact, given the complexity and history of the development of a precise formulation of theological doctrines, one might wonder if the distinction between concept and conjunctive entanglement can be easily maintained in all these cases, at least as defined by Perry and Leidenhag. This is not to deny that some theological statements are *somehow* connected with scientific claims or have empirical implications. For example, on many accounts, the doctrine of the bodily resurrection has empirical implications. Or, more controversially, as some theologians argue, if the doctrine of original sin were to entail monogenism, then the theological doctrine of original sin would have very particular empirical implications. My remarks are aimed at emphasising that the precise nature of the connection (the “somehow” above) needs to be worked out carefully. Moreover, the concept of entanglement as introduced by Perry and Leidenhag seems to imply a mutual relationship and some sort of symmetry between the involved disciplines: to understand entangled concepts, theology needs other disciplines, and these other disciplines need theology to understand these concepts. It might be the case, however, that the direction of dependence goes only one way. For example, primary analogates do not depend on secondary analogates the way secondary analogates depend on primary analogates. To understand that medicine is “healthy” one needs to understand what a “healthy” living organism is, in reference to which medicine is called “healthy”, but to

understand what a “healthy” living organism is, one need not necessarily understand what “healthy” medicine is. The relation here is asymmetrical. Medicine is called “healthy” in relation to, and as a cause of, the health of a living organism. In such cases, one discipline may need another discipline to understand a given concept, but the latter does not need the former to understand that concept in its own discipline. If what Perry and Leidenhag call “entanglements” can also be asymmetrical, the question arises as to whether the term “entanglement”, which seems to imply that the relata are mutually entangled, is the best choice to describe this relation. I thank Mariusz Tabaczek for pointing out this second, terminological complication to me.

11 The project page of “New Visions in Theological Anthropology” states: “On our view, a puzzle is a theological question that heads toward a concrete answer, deals with possible objections, is transparent about using a methodology appropriate to its success conditions, and in principle is unsolvable without the help of, at least some, empirical data” (New Visions in Theological Anthropology n.d.).

12 See also note 6 above.

13 By analogy, we could stipulate for Thomistic philosophy: (SETh₄) Thomistic philosophy is science-engaged if science is, and is used as, a *locus philosophicus (alienus)*, that is, a source of philosophical knowledge (shared with others). If this is an acceptable move, then we could conclude: (SETh₅) Thomistic theology or philosophy is science-engaged if science is, and is used as, a *locus theologicus (alienus)* or a *locus philosophicus (alienus)*, that is, a source of theological or philosophical knowledge (shared with others). For the present purpose, however, I would like to focus on the established notion of theological places relevant for theology.

14 As above, I omit here the “only if” clause to allow for other interpretations and forms of theological sources.

15 Here Wallace uses the phrase “science and religion” to refer to the academic discipline or discourse which I labelled “science and theology” above; see also note 2 above. Wallace (2001, p. 445 n. 13) then goes on to argue that, on a Thomistic view, “the relationship that should be examined critically is that between science and faith, not that between science and religion”. More particularly, his claim is that for Aquinas and his followers, the current “science and religion” debate would have to be seen as part of a larger debate—a general debate about the relationship between faith and reason (*fides et ratio*). According to Wallace, this is firstly because of the assumed complementarity of faith and reason, which, for Aquinas, cannot contradict each other, wherefore any apparent contradiction between the two must in principle be resolvable; and secondly because faith (*fides*), as a theological virtue disposing one to believe in the truths revealed by God, and science (*scientia*), as a natural virtue and type of perfect knowing, are both regarded by Wallace in a sense as intellectual virtues—that is, virtues concerning knowledge, although the latter has arguably stricter conditions than the modern notion of science—while religion (*religio*) would be a moral virtue for Aquinas. Thus, Wallace concludes that while there is relatively little connection between *scientia* and *religio* in Aquinas, there is a significant relationship between *fides* and *ratio*—by the former we accept divine revelation as true, by the latter we acquire knowledge through our natural powers—as well as between *fides* and *scientia*, which are both virtues residing in the intellect (Wallace 2001, pp. 443–45). On the details of the relation of reason to faith in Aquinas, see Niederbacher (2012).

16 Jacques Maritain (1944, pp. 38–39) states, for example: “The three orders [of abstraction, namely, physics, mathematics, and metaphysics] are not part of the same genus: they constitute fundamentally different genera”. And he goes on to say: “Physics or the philosophy of nature constitutes, with the experimental natural sciences adjoined to it, a universe of intelligibility which is essentially different from the metaphysical universe”. On this basis, he then concludes that “detailed phenomena demand a special science [namely, the natural sciences] which is specifically distinct from the philosophy of nature”. Maritain sets his view against two opposite positions, namely, absorbing natural philosophy into the natural sciences or the natural sciences into natural philosophy, which he deems erroneous. Contrary to position (3) outline above, then, Maritain (1944, p. 55) maintains that “the philosophy of nature belongs to the same degree of abstractive visualisation or intellectual vision as the sciences of nature: and this is why [...] it is fundamentally different from metaphysics”. Contrary to position (1), however, Maritain (1944, p. 60) emphasises that despite belonging to the same generic sphere of knowledge fundamentally distinct from metaphysics, they differ in species: “The philosophy of nature differs specifically from the natural sciences”. Moreover, against (1), Maritain (1995, p. 190 n. 69) defends his position as in the spirit of Aquinas: “And, if St. Thomas seems to place the Philosophy of Nature and the Sciences of Nature in the same specific class in which the diverse degrees of concretion of the object involve only differences of more or less of the same (cf. *Comm. in de Sensu et Sensato*, lect. I), it is precisely because in his epoch the Sciences of Nature, except in certain already mathematicized domains such as astronomy and optics, had not yet won their methodological autonomy and still constructed their definitions according to the same typical model as the Philosophy of Nature”. Elsewhere, Maritain (1951, p. 124) summarises his position thus: “the philosophy of nature and the natural sciences are at the same generic degree of abstractive visualization [...], but] there is a specific difference between these two types of scientific knowledge; [...] between these two specifically distinct types of knowledge there exists [...] a relationship of complementarity despite their specific distinction”. For the details of his proposal, see especially Maritain (1995, pp. 23–72; 1951, pp. 89–140).

17 In his defence of River Forest Thomism, Reese (2024, p. 1) notably rejects the school’s famous and disputed claim that “the existence of a positively immaterial being must be demonstrated in order to establish metaphysics as a ‘scientia’ distinct from natural philosophy” as one of five non-defining or non-constitutive “ancillary theses”, of which thesis (9) is the one he explicitly rejects: “(5) Aristotelian natural philosophy provides the tools for resolving present-day scientific paradoxes. (6) Aquinas’s natural philosophy is best understood in light of Aristotle’s logical works. (7) Aquinas should be interpreted as a convinced Aristotelian. (8) Aquinas’s philosophy is best drawn from his commentaries on the works of Aristotle. (9) Aquinas’s order for

learning the sciences is the same as the order for establishing the sciences, and thus metaphysics cannot be established without natural philosophy” (Reese 2024, p. 6).

- 18 The following remarks are meant to indicate that SETh is not restricted to or by definition endorsing a particular version of Thomism. The second school of Thomism mentioned above would disagree on the exact relation of metaphysics to natural philosophy and the sciences, but Maritain (1951, p. 99), as a main proponent of this school, would nonetheless agree that “the philosophy of nature and the natural sciences need each other for their mutual completion”. What is more, on his view, this mutually complementary relation of natural philosophy and the sciences also affects metaphysics: “Without a philosophy of nature which is surordinate [*sic!*] to the natural sciences and subordinate to metaphysics and which preserves the contact between philosophical thought and the universe of the sciences, metaphysics has no contact with things and can only fall futilely back upon the knowing or willing mind itself” (Maritain 1951, p. 122). Elsewhere, Maritain (1944, p. 62) states it thus: “The second error would be to reject scientific facts, to try to construct a natural philosophy independent of them, and to maintain a natural philosophy isolated from the sciences”. Such an independence is specific only to metaphysics, Maritain argues, but he hastens to add: “This does not mean that metaphysics can ignore science. [...] [I]t needs to be connected with the sciences (through the medium of natural philosophy)” (Maritain 1944, p. 62 n. 1). Thus, William Sweet (2022, sect. 3.1) observes: “Maritain’s distinctive contribution is not, however, to the details of Thomistic metaphysics, but to bringing it into relation with modern science and philosophy, and to explaining its foundations”. Furthermore, Edward Feser, whom I will mention as an example of a science-engaged Thomist below, would be a representative of the third school of Thomism mentioned above.
- 19 “Es gibt zahllose theologische Sachfragen, die sich—nicht formal aber materialiter—mit Problemen überlappen, die wissenschaftlich erforscht und aufgeheilt werden. Es liegt auf der Hand, dass die entsprechenden wissenschaftlichen Ergebnisse von Theologen zur Kenntnis zu nehmen sind”.
- 20 Here are some statements on the subject matter of theology from Aquinas in support of premise (1): Sacred doctrine “deals with God principally and with creatures insofar as they are related to God as their origin or their end” (ST I.1.3 ad 1). “[S]acred doctrine considers certain things insofar as they have been divinely revealed, everything that can be divinely revealed shares in the one formal characteristic of the object of this science” (ST I.1.3). “In sacred doctrine everything is treated under the formal characteristic *God*, either because the things in question are God Himself or because they are ordered to God as their origin and their end” (ST I.1.7). All translations in this note and notes 21 and 23 are from Alfred Freddoso, available online: <https://www3.nd.edu/~afreddos/summa-translation/TOC.htm> (accessed on 30 March 2024).
- 21 Here are some statements on the relation of theology to other sciences from Aquinas in support of premise (2): “[S]acred doctrine, while remaining a single science, extends to things that pertain to different philosophical sciences, and this because of the formal characteristic that it considers in the different things, viz., their being knowable by the divine light” (ST I.1.4). “Diverse conceptual characteristics (*ratio cognoscibilis*) make for diverse sciences. [...] Hence, nothing prevents it from being the case that the same things that the philosophical disciplines treat insofar as they are knowable by the light of natural reason should be treated by another science insofar as they are known by the light of divine revelation” (ST I.1.1 ad 2). “[T]hings that are treated in diverse philosophical sciences can be dealt with by sacred doctrine—even while it remains a single science—under a single characteristic, viz., the characteristic of being divinely revealed” (ST I.1.3 ad 2). The implicit assumption here is that what is said in these quotations about the relationship of theology to the “philosophical sciences” in the context of the question of whether (revealed) theology is necessary in addition to philosophy also applies to and is relevant for theology’s relationship to other disciplines such as the sciences in the modern sense.
- 22 “Sic ergo patet falsam esse quorundam sententiam qui dicebant nihil interesse ad fidei veritatem quid de creaturis quisque sentiret, dummodo circa Deum recte sentiatur [...]: nam error circa creaturas redundat in falsam de Deo sententiam [...]”.
- 23 One might object to this view by reference to passages like the following: “Sacred doctrine can borrow something from the philosophical disciplines not because it needs these disciplines out of necessity, but in order to make clearer the matters that are dealt with in this science. For sacred doctrine takes its first principles not from the other sciences, but directly from God through revelation. And so it does not borrow from the other sciences as from its superiors, but rather uses them as its inferiors and handmaidens [...]. Furthermore, the fact that sacred doctrine uses the other sciences in this way is due not to its own defectiveness or inadequacy, but rather to the defectiveness of our intellect, which is more easily led toward things that lie beyond reason (the subject matter of sacred doctrine) by things that are known through natural reason (from which the other sciences take their starting points)” (ST I.1.5 ad 2). Yet, in the same Question Aquinas explains further: “Nonetheless, sacred doctrine uses human reason as well—not, to be sure, in order to prove the Faith, since this would destroy the meritoriousness of faith, but rather to make clear certain other things that are dealt with in this doctrine. For since grace perfects nature and does not destroy it, natural reason must serve the Faith, just as the natural inclination of the will likewise serves charity” (ST I.1.8 ad 2).
- 24 “ea quae pertinent [...] ad quascumque creaturas cadunt sub fide in quantum per haec ordinamur ad Deum”.
- 25 Admittedly, some Thomists are skeptical as to whether science can attain natures or essences. For instance, Maritain (1995, pp. 187–88) posits that, “in general, the essence of sensible things remains hidden from us because of the matter in which it is, as it were, buried”. And he goes on to say: “These natures *would be* the specifying object of the sciences of nature, if these sciences could attain them. But they cannot” (Maritain 1995, p. 189). Consequently, Maritain distinguishes between inductive “sciences which have to do with essences *as hidden* without ever being able to uncover in themselves the intelligible necessities immanent in their object” (Maritain 1995, p. 36) and deductive “sciences which deal with these essences as known; not known in

any exhaustive fashion (for indeed we do not know all about anything) but nevertheless known or revealed (by their externals)" (Maritain 1995, p. 35). Even Maritain (1995, p. 36), however, allows for "signs and substitutes" of essences or natures in inductive sciences and states that "sensible data are mere, albeit indispensable means, a means of designating the essence" (Maritain 1951, p. 85), for which reason I added the qualification "at least certain properties indicative of their nature" in the following sentence.

26 "Nur durch die Einbeziehung der Realität von Wissenschaft und Philosophie, Gesellschaft und Kultur, Religionen und Geschichte mit ihren jeweiligen Wahrheiten erweist sich Glauben in seiner *infallibilitas* als *participatio* an Gott als erster Wahrheit". A similar consideration is also expressed by Karl Rahner (2005, pp. 306–7) when he states: "as a theologian [...] absolutely nothing of what God has revealed as Creator of the world, as Lord of history, should be uninteresting to me. [...] As a theologian, I maintain that God created the world but, since I know so little about the world, the notion of creation remains strangely empty. As a theologian, I also proclaim that Jesus, as well as being human, is Lord of all creation. Then I read that the cosmos extends thousands of millions of light-years and I ask myself somewhat fearfully what my previous statement actually means". In short, without an engagement with the whole of human experience, including the different aspects explored by the various sciences, theology remains "so abstract, so colourless, so far removed from revealing the human person and the world".

27 On my use of the notions of consistency, coherency, and applicability to experience, see Kopf (2019).

28 See, for example, Silva (forthcoming). Wallace (2001, pp. 446–48) observes: "Though not a scientist in the modern sense, Aquinas addressed many problems that arose in the medieval Aristotelian, Archimedean, Ptolemaic, and Galenic counterparts of modern physics, astronomy, chemistry, and the life sciences. [...] Most of the contributions of his followers, the Thomists, to the history of science consist in defenses and developments of Thomas's thought on these particular points". In essence, his argument is that despite notable scientific contributions by Thomists to both medieval and modern science at some point in history, around the turn of the sixteenth to the seventeenth century, Thomists lost—with a few notable exceptions—touch with the sciences, which leads him to conclude that by and large "twentieth-century Catholics have shown little interest in science" (Wallace 2001, p. 452). Elsewhere, Wallace (1968, pp. 71–72) spoke of "a disastrous encounter between Thomism and modern science that has had unfortunate consequences, reaching all the way to the present day". His summary of the history of the relationship of Thomism and science is as follows: "From the time of St. Thomas all the way to the sixteenth century, there is a sincere interest in science and its problems, and a definite contribution is made to its progress. From the beginning of the seventeenth century to the end of the nineteenth, however, the attitude is reversed. [...] Finally, by the end of the nineteenth century, they [the Thomists] grow increasingly aware that much of their rejection of modern science is arbitrary, and gradually they delete all references to science from their manuals of philosophy. They make a hurried retreat from natural philosophy, and place emphasis instead on metaphysics. [...] Thomism itself is seen as a magnificent synthesis, erected on simple sense observation alone, and standing in complete independence of modern science" (Wallace 1968, p. 77).

29 See, for example, Silva and Recio (2023), where the authors show "the plurality of ways in which theology can engage science by analysing some examples of engagement in the works of Thomas Aquinas" (p. 13).

30 Marie I. George, who might be considered another science-engaged Thomist, has recently responded to this suggestion in a critical manner; see George (2021).

31 Some of these papers were co-written with psychologists.

32 For a case study of different forms of theological engagements with the sciences, see Silva and Recio (2023). It might be objected that such a form of SETh would nonetheless not count as SET, at least in the strict sense, due to further commitments commonly held among proponents of SET. As I will show below, there are indeed differences between SETh and SET, and some of these differences might be taken to support the conclusion that SETh, even insofar as Thomistic theology rather than philosophy is concerned, does not qualify as SET, particularly if these further commitments are considered definitive of SET—a view I argue against below.

33 Some science-engaged theologians would also allow for a philosophical mediation between theology and science. In fact, there is a Templeton-funded SET project titled "Building Foundations in Science-Engaged Theology: Insights from Philosophy of Science" dedicated to the philosophy of science (Grant ID 61582). The corresponding view of SET could be rendered as follows: (SET₃) Theology is science-engaged if philosophy of science is, and is used as, a source of theological knowledge. On the mediating role of philosophy in the science and theology discourse, see also, for example, Kopf (2017).

34 The original reads "an analytic philosopher".

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